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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,300	01/16/2002	Syuuji Matsuura	0033-0785P	2317
2292	7590	12/29/2005	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			LAMBRECHT, CHRISTOPHER M	
			ART UNIT	PAPER NUMBER
			2611	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/046,300

Applicant(s)

MATSUURA, SYUUJI

Examiner

Christopher M. Lambrecht

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1 and 7 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 7 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In particular, lines 5 and 6 of claim 7 recites, "a duplexer for branching the *balanced* data signal to said CATV station..." Applicant's originally filed disclosure, however, provides no support for the duplexer of amended claim 7. In contrast, Applicant's figure 1 illustrates a duplexer [3] for branching an *unbalanced* data signal to said CATV station [see Applicant's specification, p. 8, ll. 12-15].

Accordingly, claim 7 fails to comply with the written description requirement as stated above. For the purpose of advancing prosecution on the merits, claim 7 shall be interpreted in light of Applicant's originally filed disclosure at the above-cited portions (*i.e.*, figure 1 and p. 8, ll. 12-15).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over *5V CATV Line Driver Coarse Step Output Power Control AD8322*, Analog Devices, Inc., 2000 (hereinafter “Analog Devices, Inc.”) in view of U.S. Patent No. 5,869,995 to Tam (hereinafter “Tam”).

Regarding claim 1, Analog Devices, Inc. discloses a cable modem tuner comprising an upstream circuit [AD8322; see *Functional Block Diagram*, p. 1] for transmitting a balanced data signal (differential signals bearing equal amplitudes and 180 degrees phase difference constitute balanced signals [see *Operational Description*, p. 7]) to a CATV (cable television) station [see *General Description*, p. 1], wherein said upstream circuit includes

- a gain controllable gain control circuit (“attenuation core”) [see *Functional Block Diagram*, p. 1, and *General Description*, p. 1, ¶2] receiving said balanced data signal after its band has been limited by a balanced-type band-pass filter (input signals are low-pass filtered [see *General Application*, p. 7] and subsequently high-pass filtered by ac-coupling capacitors [see fig. 6, p. 8 and *Input Bias, Impedance, and Termination*, p. 7]; thus, the received signal has been band-limited by a balanced-type band-pass filter),
- a power amplifying circuit (“power amp”) [see *Functional Block Diagram*, p. 1] power-amplifying the balanced data signal having been gain controlled by said gain control circuit [see *Description*, p. 1, ¶2], and

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- a control circuit (“power-down logic”) [see *Functional Block Diagram*, p. 1] transmitting a control signal to said power amplifying circuit for controlling transmission/interruption of said balanced data signal [see *Asynchronous Power-Down*, p. 8].

Analog Devices, Inc. further discloses the power amp is a differential transimpedance amplifier (power amp receives differential input current and produces proportional output voltage [see *Operational Description*, p. 7] and thus constitutes a transimpedance amplifier) comprising a reverse amplifier operable to isolate the amplifier output from the upstream path [see *Asynchronous Power-Down*, p. 8]. However, Analog Devices, Inc. is silent with respect to the number of power-amplifying circuits that comprise said power amp.

In an analogous art, Tam discloses a differential transimpedance amplifier comprising a reverse amplifier (“reverse buffer”) for isolating said amplifier output from an output load [see col. 4, ll. 34-44], further comprising at least two power-amplifying circuits [transimpedance stage 10 & forward buffer 14, fig. 1; see col. 5, l. 35 - col. 6, l. 11]. Tam further discloses the described amplifier configuration enables output device protection in a simple, more energy efficient manner.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power amp of Analog Devices, Inc. to include the at least two power amplifying circuits as taught by Tam, for the benefit of providing a more efficient upstream circuit for use in a cable modem.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vorenkamp (of record) in view of Analog devices, Inc., and further in view of Tam.

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Regarding claim 7, Vorenkamp discloses a cable modem tuner (5508, fig. 55) including an upstream circuit for transmitting a data signal to a CATV station and a receiving a down signal from said CATV station (§0401), comprising:

- a duplexer for branching the data signal to said CATV station and the down signal from said CATV station (where transceiver 5508 separates a bidirectional signal supplied to/from headend 5514, it inherently comprises a duplexer); and
- a return pass circuit (5514, fig. 55, §0401) outputting said data signal to said duplexer;
- said receiving unit receiving the down signal branched by said duplexer (receiver circuits, §0401), wherein said receiving unit includes
- an up-converter (fig. 5, 506, 514, FIRST LO) for converting said down signal to a first intermediate frequency signal of higher frequency (pg. 7, §118),
- a bandpass filter for selecting the first intermediate frequency signal output from said up converter (BPF located between 514 & 516 in the signal path, fig. 5), and
- a down converter (516, 508, SECOND LO, 518, BPF located immediately after 518 in signal path, fig. 5) converting the first intermediate frequency signal selected by said filter to a second intermediate frequency signal of lower frequency for output (pg. 7, §118).

Additionally, Vorenkamp discloses the use of a SAW filter for the benefit of better rejection (§0373), and furthermore forming a bandpass filter of an oscillator circuit (§0235) including a print coil (§0257-8, and fig. 28), for the benefit of better selectivity (§0257).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement said bandpass filter of with a SAW filter formed of an oscillator circuit including a print coil, as taught by Vorenkamp, for the benefit of achieving better rejection and selectivity.

Vorenkamp also discloses the use of differential signal transmission throughout the described cable modem tuner in order to achieve increased noise rejection, but fails to explicitly disclose the gain controllable gain control circuit, the at least two power amplifying circuits, the control circuit, and the balanced data signal, as claimed.

In an analogous art, Analog Devices, Inc. discloses a cable modem tuner comprising an upstream circuit [AD8322; see *Functional Block Diagram*, p. 1] for transmitting a balanced data signal (differential signals bearing equal amplitudes and 180 degrees phase difference constitute balanced signals [see *Operational Description*, p. 7]) to a CATV (cable television) station [see *General Description*, p. 1], wherein said upstream circuit includes

- a gain controllable gain control circuit (“attenuation core”) [see *Functional Block Diagram*, p. 1, and *General Description*, p. 1, ¶2] receiving said balanced data signal after its band has been limited by a balanced-type band-pass filter (input signals are low-pass filtered [see *General Application*, p. 7] and subsequently high-pass filtered by ac-coupling capacitors [see fig. 6, p. 8 and *Input Bias, Impedance, and Termination*, p. 7]; thus, the received signal has been band-limited by a balanced-type band-pass filter),
- a power amplifying circuit (“power amp”) [see *Functional Block Diagram*, p. 1] power-amplifying the balanced data signal having been gain controlled by said gain control circuit [see *Description*, p. 1, ¶2], and
- a control circuit (“power-down logic”) [see *Functional Block Diagram*, p. 1] transmitting a control signal to said power amplifying circuit for controlling transmission/interruption of said balanced data signal [see *Asynchronous Power-Down*, p. 8].

Analog Devices, Inc. additionally teach that the disclosed upstream circuit provides a low-cost solution to upstream coaxial line driving applications such as those employed in cable modems [see *General Description*, p. 1, ¶1].

Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the cable modem tuner of Vorenkamp to include the upstream circuit as taught by Analog Devices, Inc., for the benefit of employing low-cost upstream hardware in a cable modem.

Analog Devices, Inc. further discloses the power amp is a differential transimpedance amplifier (power amp receives differential input current and produces proportional output voltage [see *Operational Description*, p. 7] and thus constitutes a transimpedance amplifier) comprising a reverse amplifier operable to isolate the amplifier output from the upstream path [see *Asynchronous Power-Down*, p. 8]. However, Analog Devices, Inc. is silent with respect to the number of power-amplifying circuits that comprise said power amp.

In an analogous art, Tam discloses a differential transimpedance amplifier comprising a reverse amplifier ("reverse buffer") for isolating said amplifier output from an output load [see col. 4, ll. 34-44], further comprising at least two power-amplifying circuits [transimpedance stage 10 & forward buffer 14, fig. 1; see col. 5, l. 35 - col. 6, l. 11]. Tam further discloses the described amplifier configuration enables output device protection in a simple, more energy efficient manner.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power amp of the upstream circuit of Vorenkamp and Analog Devices, Inc. to include the at least two power amplifying circuits as taught by Tam, for the benefit of providing a more efficient upstream circuit for use in a cable modem.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Lambrecht whose telephone number is (571) 272-7297. The examiner can normally be reached on 9:30 AM - 6:00 PM.

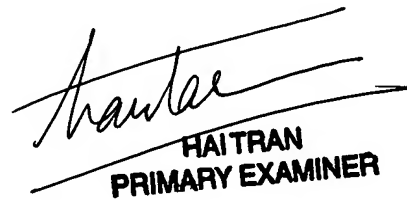
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Grant can be reached on (571) 272-7294. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christopher M Lambrecht
Examiner
Art Unit 2611

cml


HAITRAN
PRIMARY EXAMINER